

CMR ENGINEERING COLLEGE : HYDERABAD
UGC AUTONOMOUS

II-B.TECH-I-Semester End Examinations (Supply) – August - 2023

OPERATING SYSTEMS

(Common to CSE, IT, CSC, CSD & CSM)

[Time: 3 Hours]

[Max. Marks: 70]

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A

(20 Marks)

1. a) What systems calls have to be executed by a command interpreter or shell in order to start a new process? [2M]
- b) Define distributed system. [2M]
- c) How parent and child relationship is created between processes? [2M]
- d) What actions taken by a kernel to context-switching between processes? [2M]
- e) What is Deadlock? How Deadlock can be avoided? [2M]
- f) Define monitors. [2M]
- g) Draw the Structure of Page Table. [2M]
- h) Assume that a system contains 500GB secondary memory, 16GB Internal memory and size of the page is 8MB. Find the size of the page table? [2M]
- i) List out the goals and principles of protection. [2M]
- j) In a disk jukebox, what would be the effect of having more open files than the number of drives in the jukebox? [2M]

PART-B

(50 Marks)

2. Write a c program using fork() system call that generates the Fibonacci sequence In the child process. The number of sequence will be provided in the command line. [10M]
- OR**
3. Explain about the operating system services. [10M]
 4. List and discuss about the scheduling algorithms. [10M]
- OR**
5. Can a thread ever be preempted by a clock interrupt? If so, under what circumstances? If not, why not? Explain in detail. [10M]
 6. Consider a system with three processes and four resources. Resource R1 and R3 with one instance, R2 with two instance, process P1 holding an instance of R2 and waiting for r1, process P2 is holding an instance of R1 and R2 and waiting for R3, process P3 is holding an instance of R3. [10M]
 - a) Draw resource allocation graph to the given system.
 - b) Is it possible to apply the Resource allocation graph algorithm to avoid deadlock? Explain.
- OR**
7. Explain about the IPC between the processes on different systems. [10M]

8. Explain about FIFO, LRU page replacement algorithms with example. [10M]

OR

9. Discuss various address translation mechanism in paging. [10M]

10. What is file structure? How file structure is supported by different operating systems? Explain [10M]

OR

11. Explain about the file system structure. [10M]
